



CLARK COUNTY DEPARTMENT OF BUILDING

Field Inspection Guideline



SUBJECT: Fire-Rated Side-Hinged Door Inspection Process			FIG-B-017
Effective Date: February 1, 2010	Reviewed: June 5, 2013	Approved By: BAT	
Code Chapter: 2010 NFPA 80 (All Code) - 2012 IBC Chapter 7, 10			Page 1 of 5

Interpretation:

The requirements for fire-rated doors are not completely addressed in the International Code or on the approved plans. The full requirements for fire doors are provided by use of both the IBC and NFPA Standard 80, as referenced in the code. The following requirements are guidelines for field staff when inspections of fire rate door assemblies are required.

Definitions

- **Builders Hardware:** Builders hardware is applied only to swing doors and consist of hinges, locks or latches, and closers. Within this category is "Fire Exit Hardware."
- **Fire Exit Hardware:** Fire exit hardware consists of exit devices which have been labeled both for fire and panic protection.
- **Exit Hardware:** A latching mechanism designed to open in the direction of egress in an emergency. The latching mechanism releases through pressure on the touch or cross bar mounted on the push side of the door.
 - **Panic exit hardware**
 - **Fire exit hardware**

General

Where the section starts with just a number (7165) this is reference to 2012 IBC code section. The other references are to NFPA and ANSI standards; then the reference number within that standard is identified.

- Fire doors shall be installed per IBC sections 715, 1008 and per NFPA standard 80. (716.5)
- Fire door assemblies shall be labeled with the label affixed to the door OR frame. (716.5.7)
- Fire door frames shall be labeled. (716.5.7.4), (NFPA 80, 6.3.1.1)
- Fire doors shall be self closing or automatic closing. (716.5.9)
- Fire doors between R-1 units do not have to be self closing. (716.5.9 exception # 1)
- The door opening shall have a minimum clear width of not less than 32 inches measured between the door opened at 90 degrees and the stop (this width does not apply to the hardware) (1008.1.1)
- The maximum width of any door leaf is 48 inches. (1008.1.1)
- Minimum door height shall be 80 inches. (1008.1.1)

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- Doors shall swing in direction of egress for all occupant loads of 50 or more, and for all Group H occupancy. (1008.1.2)
- Handles and controls shall be mounted between 34-48 inches (1008.1.9.2)
- Locks used for security purposes only (not normal use) mount at any height (1008.1.9.2)
- Hinges shall be installed per listing and manufactures installation instructions. (NFPA 80, 6.4.3.2.1)
- All hinges or pivots shall be ball bearing type. (NFPA 80, 6.4.3.1.2)
- To meet door gap requirements, steel shims at the hinges shall be permitted. (NFPA 80, 6.4.3.4)
- Closing mechanism shall not have a hold open feature. (NFPA 80, 6.1.4.2.2)
- Door holder/release devices shall be installed per manufactures listing. (NFPA 80, 6.4.2)
- Fire exit hardware shall be installed on doors marked "fire door to be equipped with fire exit hardware". (NFPA 80, 6.4.4.2)
- Fire exit hardware shall only be labeled for both fire and panic. (NFPA 80, 6.4.4.2.1)
- Fire exit hardware shall have permanent label bearing serial number, manufacturer's name, and type of approval. (NFPA 80, 6.4.4.2.2)

Panic and fire exit hardware requirements. (1008.1.10)

- All doors in egress from 'A' and 'E' occupancy of 50 or more shall be panic hardware.
- Maximum unlatching force of 15 pounds
- Actuating portion shall extend minimum half way across door leaf
- Panic hardware shall be listed in accordance with UL305
- Fire exit hardware shall be listed in accordance with UL10C and UL305

Frame inspection

- A level landing on each side of the door opening. (1008.1.6)
- Minimum distance between doors in series, other than smoke proof enclosure vestibule doors space is length of door plus 48 inches (36"+48"=84"). (1008.1.8)
- Frames shall be anchored securely to the wall construction. (NFPA 80, 6.2.1.2)
- Method of anchoring the frame shall be shown in the listing. (NFPA 80, 6.3.1.2)
- In rated block wall assemblies all hollow cells within 16 inches of the opening shall be solid grouted. (NFPA 80, 4.8.1.2)

Final inspection

- Level landing on each side of the door opening. (1008.1.6)
- Exterior landings may slope away from the building ¼ inch per foot (ANSI 304.2)
- Maximum height of thresholds is ½ inch, changes greater than ¼ inch to be beveled 1:2 slope. (1008.1.7)
- Door shall be operable from inside without key or special knowledge or effort. (1008.1.9)
- Door handles, pulls, latches, locks required shall meet ANSI for gripping requirements. (1008.1.9.1)
- Max 5 pound force to activate, no tight grasping, pinching, or twisting of the wrist. (ANSI A117.1, 309.4)
- 20 minute doors may have a view port not more than one inch in diameter. (716.5.3 except 1)

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- Labeled viewer with max hole size ¾ inch. (NFPA 80, 4.1.3.2 and 4.4.7)

Smoke and draft controls doors

- Smoke and draft control doors complying with UL 1784 shall be labeled as such. (716.5.6.1)
- Smoke and draft control door labels shall have a letter “S” on the rating label. (716.5.6.3.1)
- Smoke and draft control door and frame assembly require a labeled gasket to be installed. (716.5.6.3.1)
- Smoke door assemblies (door, frame, hardware, accessories) shall be labeled with a letter “S” and state air leakage rate. (NFPA 105, 4.4)

Smoke activated door closing systems. (716.5.9.3) and (NFPA 72, 17.7.3.2)

- Doors shall close on activation of detector or loss of power. (716.5.9.3)
 - In close proximity to the door (NFPA 80, 17.7.3.1.4)
 - Detector shall be on ceiling or wall 12” down from ceiling

Power operated doors

- Upon loss of power the door shall be manually operated with the following forces.
 - Without power unlatching force of 15 pounds (at latch side) (1008.1.3)
 - Without power the door set into motion with force of 50 pounds (at latch side) (1008.1.4.2)
 - Doors with closures, the door swing force to full open with 15 pounds force (at latch side) (1008.1.3)

Locks and latches

- B,F,M,S, religious worship and A with occupant load of 300 or less, may have keyed lock on front door only when: (1008.1.9.3)
 - Lock device readily distinguishable as locked (sign)
 - Sign above door “to remain unlocked when building occupied”
- Locks used for security purposes only (not normal use) mount at any height (1008.1.9.2)
- Only labeled locks and latches shall be used. (NFPA 80, 6.4.4.1)
- Manual Flush bolts or surface bolts (security bars) are not permitted (1008.1.9.4)
- Delayed egress locks, building shall have sprinklers and smoke detector system (1008.1.9.7)
- Delayed egress locks, in “B, F, I, M, R, S, U” occupancies only. (not A, E, or H) (1008.1.9.7)
- Delayed egress locks, unlock on activation of alarm or loss in power (1008.1.9.7 #1, 2)
- Delayed egress locks, max 15 second delay with sign stating so. (1008.1.9.7 #4, 5)
- The throw of single-point latch bolts shall not be less than the minimum shown on the fire door label. (NFPA 80, 6.4.4.6.1)
- The minimum throw shall be as specified in the installation instructions. (NFPA 80, 6.4.4.6.2)
- Electric strikes shall be permitted when installed per their listing. (NFPA 80, 6.4.4.11)

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Glass requirements

- Fire rated glass shall be labeled (716.3)
- Glazing labels shall be four part (716.3.1):
 - D = means fire standards for doors
 - H = means meets hose stream test (required for all but 20 min doors)
 - NH = means does not meet hose stream test
 - T = means meets temperature requirements
 - NT = does not meet temperature requirements
 - XXX = time rating period in minutes
- Door glazing shall meet safety glazing requirements. (716.5.8.4)
- Wired glass size limit in rated doors (Table 716.5)
 - 3hr = 0 square inches
 - 1 ½ hr exterior doors = 0 square inches
 - 1 and 1 ½ hr = 100 square inches
 - ¾ hr = 1,296 square inches
 - 20 min = not limited

Fire protection-rated glass size limitation in rated doors (NFPA 80, table 4.4.5)

- Each individual glazing unit shall be identified with label that is visible after installation (NFPA80, 4.4.6)
 - 3hr = 100 square inches
 - 1 ½ hr exterior doors = limited to maximum area tested (per glass listing)
 - 1 and 1 ½ hr = limited to maximum area tested (per glass listing)
 - ¾ hr = limited to maximum area tested (per glass listing)
 - 20 min = limited to maximum area tested (per glass listing)

Maintenance inspection

- Upon completion of installation, all fire door assemblies shall be tested to confirm operation. (NFPA 80, 4.9.1)
- Fire door assemblies shall be inspected and tested annually and a written record of the inspection shall be signed and kept for inspection by the AHJ. (NFPA 80, 5.2.1)
- When holes are left in a door or frame due to changes or removal of hardware or plant-ons, the holes shall be filled with steel fasteners or repaired with filling the hole with the same material as the door or frame. (NFPA 80, 5.2.15.4)
- The opening force in interior doors without closures is 5 pounds (at latch side). (1008.1.3)
- Doors with closures the max unlatching force of 15 pounds (at latch side). (1008.1.3)
- Doors with closures, the door set into motion with force of 30 pounds (at latch side). (1008.1.3)
- Doors with closures, the door swing force to full open with 15 pounds force (at latch side). (1008.1.3)
- Signs on doors limited to max 5% of door area (150 sq in). (NFPA 80, 4.1.4.1)
- Signs on doors shall be glued only (no screws permitted). (NFPA 80, 4.1.4.2.1)
- Maximum clearance under a door ¾ inches. (NFPA 80, 4.8.4.1)

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- Double doors shall have a coordinating device to close properly (NFPA 80, 6.4.1.2.1)
- All components of a fire door assembly shall be attached firmly to walls, doors and frames in a manner acceptable to the AHJ. (NFPA 80, 6.5.3)
- Fire door assemblies shall be visually inspected from both sides to assess the overall condition of the door assembly. (NFPA 80, 5.2.4.1)
- As a minimum the following items shall be verified in inspection of fire door assemblies. (NFPA 80, 5.2.4.2)
 - No open holes or breaks exist in surfaces of either the door or frame.
 - Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.
 - The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order with no visible signs of damage.
 - No parts are missing or broken.
 - Door clearances at the door edge to the frame, on the pull side of the door; do not exceed 1/8 inch +or- 1/16 inch for steel and 1/8 inch for wood.
 - The self-closing device is operational, that is, the active door completely closes when operated from the full open position.
 - If a coordinator is installed, the inactive leaf closes before active leaf.
 - Latching hardware operates and secures the door when it is in the closed position.
 - Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame.
 - No field modifications to the door assembly have been performed that void the label.
 - Gasketing and edge seals, where required, are inspected to verify their presence and integrity.

Revision History:

Reference#	Title	Effective Date	Revised	Reviewed
FIG-B-017	Fire-Rated Side-Hinged Door Inspection Process	February 1, 2010		
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